Amendments to the Claims

Listing of the Claims

This Listing of the Claims will replace all prior versions and listings of claims in this application.

1. (Currently Amended) A MOSFET transistor structure formed in a substrate of semiconductor material having a first conductivity type; the MOSFET transistor structure comprising:

an active region of the substrate, the active region having a substantially rectangular perimeter;

perimeter isolation dielectric material formed in the substrate along the entire substantially rectangular perimeter of the active region to define a continuous substantially rectangular interface between the isolation dielectric material and the active region;

spaced-apart source and drain regions having a second conductivity type opposite the first conductivity type formed in the active region to define a substrate channel region therebetween, both the source region and the drain region also being spaced-apart from the substantially rectangular interface; and

a conductive gate electrode that includes a first portion that extends over the substrate channel region and the second portion that extends continuously over the entire substantially rectangular interface between the isolation dielectric material and the active region, the conductive gate electrode being separated from the substrate channel region by intervening gate dielectric material, the conductive gate electrode including a first opening formed therethrough over the source region and a second opening formed therethrough over the drain region.

2. (Original) A MOSFET transistor structure as in claim 1, and wherein the perimeter isolation dielectric material comprises silicon dioxide.

3. (Original) A MOSFET transistor structure as in claim 1, and wherein the conductive gate electrode comprises polysilicon.

4. (Original) A MOSFET transistor structure as in claim 1, and wherein the gate dielectric material comprises silicon dioxide.

5. (Original) A MOSFET transistor structure as in claim 1, and wherein the first conductivity type is P-type.

6. (Previously Presented) A MOSFET transistor structure as in claim 1, and wherein both the source region and the drain region are spaced-apart from the substantially rectangular interface by about 1000-5000 Angstroms.

7. (Currently Amended) A method of forming a MOSFET transistor structure in a substrate of semiconductor material having a first conductivity type, the method comprising:

forming isolation dielectric material in the substrate such that the isolation dielectric material defines a substantially rectangular active region of the substrate, the isolation dielectric material being formed along the entire perimeter of the active region to define a continuous substantially rectangular interface between the isolation dielectric material and the active region;

forming a layer of gate dielectric material that extends over the active region and over the continuous interface between the isolation dielectric material and the active region;

introducing dopant material into the active region to define spaced-apart source and drain regions having a second conductivity type opposite the first conductivity type and defining a substrate channel region therebetween, both the source region and the drain region being spaced-apart from the interface; and

forming a conductive gate on the gate dielectric material, the conductive gate including a first portion that extends over the substrate channel region and a second portion that extends continuously over the entire interface between the isolation dielectric material and the active region, the conductive gate electrode being separated from the

substrate channel region by intervening dielectric material, the conductive gate electrode further including a first opening formed therethrough over the source region and a second opening formed therethrough over the drain region.

8. (Original) A method as in claim 7, and wherein the both the source region and the drain region are formed to be space-apart from the sidewall interface by about 1000-5000 Angstroms.